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Maintaining Canada's Research Base in the Current Funding Environment: NSERC Responds to Its Community

This special issue of *CONTACT* has been produced at the request of the Committee on Research Grants (CORG), NSERC's advisory committee on policy to the Research Grants Directorate, with the endorsement and support of Council. Grave concern has been expressed recently about NSERC's commitment to maintaining a broad, diverse, and strong research base and, more specifically, to the future of the Research Grants (formerly Operating Grants) program. In response, CORG has assembled a series of articles designed to clarify and explain the Council's position.

Authors of the articles in this special issue have been identified by name and both academic and NSERC affiliation, and these authors are responsible for the opinions they have expressed. Each contribution, however, has been approved by a majority of members of CORG and checked for factual accuracy by senior members of NSERC's staff. At the request of CORG and Council, W.G.E. Caldwell, Vice-President (Research) at the University of Western Ontario and a member of both CORG and Council, agreed to serve as General Editor of this special issue. He, in turn, requested and received the co-operation of Pierre Normand, Chief of Communications for NSERC and Editor of regular issues of *CONTACT*.

CORG is deeply grateful to President Peter Morand for encouraging and making possible this special issue of *CONTACT* and for agreeing to contribute to it himself.

A Time to Come Together

During the last several months, there has been a great deal of communication, including much correspondence, between NSERC and members of the Canadian research community. Much of it was the result of widely circulated rumours and misconceptions about where NSERC programs and policies

are heading and about the future of the Research Grants program. Several attempts were made to correct the misconceptions, but the rumour mill proved to be faster.

This special issue of *CONTACT* is being published at the suggestion of NSERC's Committee on Research Grants (CORG), and I am grateful to the members of this committee for their initiative and for the time and effort they have contributed to its preparation. Council is well aware of the need for maintaining good communications with Canada's science and engineering research community. Some of the articles in this issue provide explanations and additional information on specific NSERC programs and policies; others present the views and perspectives of Council members and/or members of CORG. I hope the articles will serve to encourage a constructive dialogue among the various stakeholders in our community.

To place things in the proper context, it is important to remember our origins. NSERC was established in 1978 after it had become clear that the National Research Council could no longer fulfill a dual mandate for national laboratories and a research granting agency. The new council was given a broad mandate to support research in the natural sciences and engineering and to advise the Minister. NSERC is an arm's-length agency with a governing council whose members are appointed by the federal government. This governing council has refined NSERC's role and has focussed support on the university research community, as can be seen in the mission statement which was adopted by Council last January:

> The Natural Sciences and Engineering Research Council fosters the discovery and application of knowledge through the support of university research and the training of scientists and engineers. The Council promotes the use of this knowledge to build a strong national economy and improve the quality of life of all Canadians.
>
> NSERC fulfills its mission by awarding grants and scholarships through a competitive process and by building partnerships among universities, governments and the private sector.

Council believes our mission statement reflects the expectations of Canadians who increasingly see university research and NSERC as essential contributors to society. These expectations also underlie the wide-ranging review of the federal government investment in science and technology that is being undertaken. The existence of this review and the extensive consultation that is taking place emphasize the importance that the government places on research. In the context of the deficit reduction exercises that are taking place at the same time at all levels of government, it is imperative that we come together to present the best arguments in support of the full range of university research, from the most

fundamental to applied research and design.

The time for debating the pros and cons of specific types of research is over. We no longer can afford to engage in lengthy debates that don't relate to the concerns and needs of the country. We don't have to convince one another of the benefits and of the importance of research. We know it. In fact, most of us have chosen a career in science and engineering for that very reason. But we are facing a collective challenge, which is to open up to other Canadians and to share with them our enthusiasm for research. This is not an easy task. Even though we can be proud of our achievements, it is incumbent on all of us to continue to make the case to convince the decision-makers and, most importantly, the taxpayers of the importance of supporting university research.

We must seek out every opportunity to build mutual confidence between the researcher and the public. To quote Dr. John H. Gibbons, Science Advisor to the President of the United States, from a presentation he made in London last December, "we must articulate a vision that more convincingly links science and technology to national and international goals. A better defined trail that leads from the laboratory to real world concerns can help to capture the enthusiasm and support necessary to bring the potential of science and technology to fruition and to renew a commitment to the pursuit of knowledge as a societal good innovative of itself." If we succeed in making the investment in the advancement of knowledge a valuable and essential commodity for Canadians, the market for research will expand, and all research will be better funded.

Reflecting the precarious financial situation in which Canada finds itself, the federal government has undertaken an internal review of all its programs, including NSERC's. Council may well be entering a prolonged period of restraint in which all programs, no matter how worthwhile, will be under increased pressure. Each of these programs has established users and is meeting valid and important needs. In some cases, the funding was provided by the government for specific purposes. Like all other groups in Canada, we are faced with difficult choices. But we have the benefit of people whose dedication, commitment, and creativity represent our most important strength. Today, more than ever, it is essential that we carefully assess the stakes and have all the facts to make informed choices so that we can face our future with confidence.

Council is fully committed to the advancement of all types of excellent research in science and engineering in Canadian universities. Concerned about the reaction of some members of the community to the events of last spring, Council felt it was necessary to reassure university researchers and so, last June, it adopted a resolution re-affirming its commitment "to maintain and enhance the Research Grants program." This commitment is also expressed in the recently published Strategy, which presents a framework for a balanced approach to research funding. At the same time, it underlines our commitment to

excellence and to long-term, researcher-initiated studies through all programs.

Our goal in publishing this special issue of CONTACT is to provide factual information and, most importantly, to open communications and build confidence at a time of renewed challenges and uncertainties. Now more than ever, we must capitalize on our strengths and work together in this fast-changing environment. I strongly believe the university research community has a seminal role to play in Canada, and I am calling on all of you to take that first step towards our future.

Peter Morand
President of NSERC

A Synopsis of the Issues

Since its inception, NSERC has been held in high regard nationally and internationally. Many scientists and engineers who have worked under other granting systems have claimed that it may be the most enlightened granting council in the world. Unfortunately, in recent months, dissension within the academic community about the depth and sincerity of NSERC's commitment to maintaining a diversified, strong, national research base has detracted from the Council's repute. In this connection, the spotlight has been focused most sharply on the future of the Research Grants (formerly Operating Grants) program.

The Committee on Research Grants and Council are perturbed by these developments. This special issue of *CONTACT* has been assembled with several objectives in mind:

a. to make known the facts bearing on the key issues of concern;
b. to review these issues so that the rationale for many of Council's relevant decisions will be better understood; and
c. to demonstrate the commitment of NSERC to enhancing communication with the academic research community in the country.

The intent of this initial article is to summarize the issues as CORG understands them.

CORG is aware that disquiet in the academic community about some of NSERC's programs has been growing for some time. This disquiet has manifested itself in frustration over intensifying degrees of selectivity which have denied many deserving and qualified applicants entry to the system or support for their worthy projects. The higher selectivity has also discouraged others from competing and led still others to

receive decreased or static funding or to lose their funding altogether. The frustration and higher selectivity have the same root: insufficient funds to meet the aspirations, demands, expectations, and needs of the community, and this despite the government's relatively favourable stance on funding NSERC in a period of severe fiscal restraint.

In making recommendations for the award of Research Grants, NSERC's Grant Selection Committees (GSCs) have been exercising increasing selectivity in terms of quality of applicant and application for well over fifteen years. A majority of the community has understood the rationale for this and accepted it. A minority has reacted with anxiety and grave concern. In the last year or two, however, a number of factors (some long recognized, others of more recent origin) have combined to swell the ranks of the former minority and to bring selectivity and other aspects of the Research Grants program again under rigorous examination. As a result, criticism of NSERC has become more common and vocal.

A series of issues and perceptions are at the root of this criticism, and they can be summarized as follows:

- Further selectivity or reduction in level of support will endanger the necessary depth and diversity of the national research base.
- In the present financial climate, it is difficult to ensure adequate rejuvenation of the research base: the need to maintain a balance among applicants who are new (i.e., applying or reapplying for their first Research Grant), those who are more experienced and senior, and those who have achieved international renown means that too few "new" applicants are being funded.
- Higher selectivity is tending to widen the artificial gap between university teaching and research. This has serious implications for the cohesiveness of departments and faculties, as it has for graduate students, who increasingly are receiving formal instruction from faculty members unable to secure independent, peer-reviewed, research funding.
- External pressure to direct the public subsidies of universities increasingly toward the teaching function is diminishing the fundamental role of research and masking the contribution that research makes to job and wealth creation and to the quality of life of Canadians.
- External pressure to support more and more research that is perceived to have socio-economic relevance in the shorter term is ignoring and obscuring the importance and place of fundamental new discovery. In time, this will jeopardize the longer-term future of applied research and innovation.
- The multiplicity and proliferation of NSERC programs is draining funds from the Research Grants program, thereby reducing the ability of university departments of science and engineering to do more of what they do best -- conduct a wide range of fundamental to applied

research with the aid of a simple granting system.

These growing perceptions, coupled with increasing scarcity of funds, have resulted in more questions being asked about NSERC's program structure and the future of certain of its components. Many members of the community hold strong views and have voiced their suggestions as to how research can be supported most effectively.

In addition, a series of events in the last year led to the vigorous debate that took place in the spring of 1994. These events may be summarized as follows:

- Last autumn's process of consultation leading to the adoption of NSERC's new strategy did not satisfy some members of the community, who would have preferred more extensive and scholarly debate and a stronger endorsement of the Research Grants program in the final version of the strategy.
- Preliminary data on budgets within the Research Grants program released to GSCs last autumn indicated that, even without anticipated performance-based redistribution, grant amounts were likely to be lower than in previous years. Committees in which the number of new applicants approached the number of renewals would be especially affected.
- Remarks made by the President of NSERC during "competition week" in February led to confusion and misinterpretation in the community about Council's commitment to the Research Grants program.
- Reduced- or nil-funding decisions sent following "competition week" were correlated by many applicants with rumours that NSERC was planning to phase out the Research Grants program and to redirect its programs away from the support of university-based research.
- The low success rate in the Postgraduate Scholarship competition was also interpreted by many as signalling a withdrawal of support for scholars wishing to engage in fundamental research. Moreover, a reduced number of Undergraduate Student Research Awards was linked to the reduced number of Postgraduate Scholarships and attributed to similar causes.
- The decision to implement the Collaborative Project Grants (CPG) program later in the year by drawing funds from the already hard- pressed budgets of the Research Grants and other programs, and the decision to adopt a two-phase review process for the CPG program also raised concerns within the community.

These events, issues, and perceptions all had a serious impact on the well-established tradition of openness between NSERC and the academic research community. As representatives of that community, the members of CORG, with the full agreement of Council, believe it important to foster a climate of confidence and trust in NSERC by its grantees and supporters. CORG and Council will continue to give the major issues of

concern fair and full consideration in all future, relevant policy deliberations. Meanwhile, this special issue of *CONTACT* should provide the community with appropriate explanation and factual information useful in re-opening the constructive dialogue with NSERC that has always been the cornerstone of Canadian university-based research in science and engineering.

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Making the Case for Research Grants: A Call for Solidarity

If ever there was a time for the NSERC community to stand together, support the Council, and speak with one voice, it is now. The federal government has embarked on a major review of its $7 billion investment in science and technology, which includes the support of the granting councils. Concurrently, the government has required all its departments and arm's-length agencies to engage in a reassessment and prioritization of their programs. Now is the time, therefore, for the large number of university-based scientists and engineers, whose research has been funded in part through the Research Grants (formerly Operating Grants) program, to help ensure that NSERC emerges from these reviews with its support enhanced. More support is needed not only for the Research Grants program but for all programs, and there is little likelihood of the former being successful if the latter fails. If help from the Research Grants community is to be effective, it will require submissions based on accurate information (see, for example, the preceding article by Nigel Lloyd on *The Budget of the Research Grants Program: Its Evolution and Implications*), convincing argument, and persuasive examples; and these submissions should be prepared with an awareness and understanding of how the Research Grants program is perceived both within NSERC and within the larger, multi- sectoral community of engineers and scientists in the country. This article may help set the Research Grants program in the broader context.

The current and future status of the Research Grants program lies at the heart of the academic community's recently expressed concerns about the future of fundamental research and maintenance of a broad, diverse, and strong research base in Canada. As it applies to this program, budgetary constraint has directed the community's attention to the

allocations process and led to the commonly expressed opinion that more money should have been secured from government, or drawn from other NSERC programs, and invested in Research Grants. When such a call to redistribute funds is made, a number of points need to be kept in mind. First, Council reviews its funding allocations at least three times a year. On some of these occasions, Council finds itself in the unenviable position of having to adjust a balance: on one side lies the demand to create new, and adjust existing, programs to meet all facets of the NSERC mandate; on the other lies the need to nurture at least the most deserving programs, including Research Grants, to the extent that is possible and that they warrant. The balance must reflect the weight of opinion not just of the academic community but of the larger, multi-sectoral community with a stake in Canadian engineering and science. That same balance must also attempt to maximize the return on NSERC's entire budget for the support of its programs. Thus, the financial weights that Council can add or subtract to or from individual programs are of necessity small. Furthermore, the balance table is notably unsteady, rendered so by the rapid changes in the current R and D environment.

Second, NSERC's budget for the support of research has been kept intact while the budgets of other government departments have been cut and cut again. Members of the community may not see a static budget as reason for acknowledgement or gratitude, but in the present financial environment in Ottawa to have kept a budget intact is an accomplishment. Maintenance of NSERC's research budget profitably might be kept in mind when writing to politicians on the Research Grants issue.

Third, and most important, members of the academic community should keep in mind that the general perception of the Research Grants program in the public and private sectors is very different from that in the academic sector. In the former, it is not well understood and, therefore, not held in nearly as high esteem. Government ministers, senior civil servants, company executives, and experienced and respected national scientific figures (some even from universities) have expressed reservation, not about support in principle of "basic" research or the individual investigator, but about the relative magnitude of the Research Grants budget and the number of researchers supported by it. The strong suspicion is that NSERC is supporting too many researchers through this program and that the program largely supports "curiosity-motivated," "free" research. The result, it is claimed, is that even the best grantees are supported at too low a level to be truly effective and internationally competitive. Furthermore, adequate support is then denied the targeted programs in which the research would seem to have much greater relevance to the nation's needs. Figures are quoted to support these claims. For example, the success rate for applicants seeking renewal of their Research Grants is over 80% -- much higher than the rate in any other NSERC program and higher than for the comparable programs of other national granting councils. The success rate for Strategic Grants is about 20%; that for the new

Collaborative Project Grants may be as low as 10%.

These perceptions exist, whether or not NSERC's committee members or grantees consider them valid. Members of the Committee on Research Grants (CORG) and many members of Council consider the claims made to explain the public- and private-sector perception of the Research Grants program to be seriously flawed. These members do so because

(a) "basic" research is the foundation of all other kinds of research and an essential investment in the longer-term future of the country;
(b) the investment in the Research Grants program would seem quite appropriate if Canada could afford to compete more realistically with other countries in the percentage of its GDP it invests in R and D;
(c) the 80% success rate in Research Grants is based on the number of applicants for renewal only, not on the amount of money needed or requested, and on a research base from which all but the most productive and talented researchers already have been removed;
(d) close to 900 new applicants (about 25% of the total number of applicants) now seek Research Grants annually, and too low a proportion of these is being successful to guarantee the future integrity of the national research base; (e) a significant proportion of the research underwritten by the Research Grants program is "applied" or "targeted" or "strategic," not "basic," if these misleading and unfortunate terms must be used; and
(f) a significant proportion of the Research Grants budget is devoted to the training of highly qualified personnel and, as such, is a most economical and effective way of producing the skilled workforce Canada needs to compete in the new, knowledge-based, global economy.

Nonetheless, having mistakenly allowed a categorization of the research continuum from "basic" to "applied" to become entrenched, and having quite inadequately explained the significance of "curiosity-motivated," "free" research to government officials and the public, NSERC grantees should not find it difficult to understand why more and more questions are being asked about the emphasis of much university-based research and about federal programs to fund it.

NSERC's efforts to obtain more funding specifically for the Research Grants program have not been particularly successful. In 1990-91, at the urging of the first Communications Task Force, Council made a concerted effort better to inform decision- and opinion-makers across the country about the accomplishments of the academic research community. In various ways, the efforts have been maintained. Members of Council and CORG, assisted by selected senior researchers, have been involved. It is difficult to measure the direct impact of these efforts, but in 1991 the government added $90.4 million to NSERC's base budget -- an amount equal to the maximum sum raised during the years of the Matching Funds program with industry -- $40 million of which

were allocated to the Research Grants directorate. This being said, new funds awarded by government have mostly been earmarked for so-called targeted programs, the Networks of Centres of Excellence as an example. The government's unwillingness to provide further support directly to the Research Grants program is a manifestation of a very real preoccupation in the public sector with the relevancy of research to economic and social issues. Among NSERC's programs of grants, this relevancy is perceived to be lowest in Research Grants.

NSERC is not the only granting council affected by the economic realities of the times. In his March 1994 Progress Report on MRC, President Henry Friesen makes some familiar observations. For example, "Government has made it clear that it is under severe financial constraints, and, for the foreseeable future, significant amounts of new money will likely have to come from targeted initiatives and from the private sector." Elsewhere in the same report, the President remarks, "A commonly heard concern is that, in the absence of new government funding, expansion of MRC's support for health research ... threatens our traditional commitment to investigator-initiated basic and fundamental research. The scientific community can rest assured that we are committed to striking a balance... -- a balance that protects basic research. [emphasis added.] The view in NSERC is no different.

Hence, in the current economic climate, if the NSERC community wishes to help secure a larger budget for the Research Grants program, CORG and Council would strongly urge the community to agree on a series of concurrent steps.

1. Make a concerted effort to communicate to the public the indispensable role of fundamental research in advancing science and engineering.
2. Document accurately for NSERC and inform the public about the essential basic research underpinning any significant discoveries of obvious socio-economic benefit.
3. Ensure that NSERC and other relevant parties are fully informed about the degree to which the Research Grants program supports the training of highly qualified personnel, and provides jobs both through the hiring of associated research personnel and graduate students and through transfer of the results of the research to spin-off companies and to other components of industry.
4. Help NSERC assemble reliable data that will demonstrate the proportion of the research supported by Research Grants that is collaborative with the public and private sectors.
5. Do the same to demonstrate the proportion directed toward issues of strategic importance to Canada and that are potentially applicable, in a fairly direct way, to solving problems of importance to industry.
6. The community could eliminate confusion and uncertainty by agreeing to a common stance in its approach to government for increased funding.

CORG subscribes to the view that securing a larger budget for the Research Grants program is most likely to be achieved through increased support for all of NSERC's programs. A year or two ago, Dr. William Winegard, then-Minister of Science, succeeded in obtaining a commitment from government for a 4% increase in NSERC's overall program budget for three years but, when it became evident that the federal deficit was continuing to grow, this was revoked before it could be implemented. Now Finance Minister Martin has forecast a 1.5% increase in NSERC's overall budget in each of two years beginning in 1995. Will this become reality, or could it too be withdrawn because of the country's continuing financial difficulties? By writing to cabinet ministers and MPs, the community could influence that result, but only if the approach is consistent, factually correct, and well reasoned. That approach needs to be supported, too, by the kinds of information called for in points (1) to (5) above.

In the interim, the academic community can be assured that Council stands firmly behind the Research Grants program. Prior to June of this year, the future of the program had never been discussed by Council, presumably because the central place of the program had never been questioned by any of its members. Uncertainty about the program's future, expressed by many members of the community, however, brought the question to the Council table at the June meeting, when the following resolution was passed unanimously:

> Council reaffirms its belief in the foundational role of the Research (Operating) Grants program in supporting all kinds of university-based research in science and engineering and in training highly qualified personnel in these fields. Council will seek vigorously to maintain and enhance the Research Grants program in the future, as it has in the past.

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Member of CORG and Council

The Collaborative Project Grants Program: Its History and Rationale

As identified in a previous article of this special issue, NSERC's new Collaborative Project Grants (CPG) program and its relationship to the Research Grants program have been a topic of widespread discussion in recent months. A brief review of the history of the program is presented to explain more fully the factors that repeatedly were balanced and weighed during the CPG program's long gestation. An effort is made also to correct some surprisingly persistent misconceptions about the program.

In 1989, the then-President of NSERC, Arthur May, discussed with the advisory committee on policy to the Research Grants Directorate the need to examine the effectiveness and efficiency of delivery of the programs under its purview. (At that time, the committee in question was the Committee on the Research Base, CORB, predecessor of the present Committee on Research Grants, CORG. As the latter committee also became involved in founding the CPG program, however, only its name, for simplicity, will be used in this article.) Among the many reasons advanced by President May to support a review of the grants programs, the following are most germane to the present discussion:

- the inadequacy of existing programs for the support of interdisciplinary research and team research (which, even five years ago, had become notably more important)
- the commonly unrealistic assessment, by both applicants and Grant Selection Committees (GSCs), of the actual cost of conducting research to competitive international standards, and the implications of this lack of realism for the country's best researchers;
- the long-term need to justify a larger investment by the federal government in NSERC's programs, and the more immediate need to persuade the government to increase the Council's base budget by an amount equal to the maximum revenue from the "Matching Funds Policy."

Armed with a wealth of data about NSERC's existing programs and comparable programs sponsored by other national granting councils, CORG held a two-day retreat in the fall of 1989 and deliberated on how NSERC's programs and their delivery might be better adapted to a changed and changing research milieu. Discussion was wide- ranging. How best to promote and support inter- and multi- disciplinary research was a key issue, and the relative merits of budget allocation in the form of discipline-related envelopes vs. program-related envelopes; of discipline-orientated grants vs. project-orientated grants; of maintaining a broad, diverse national research base vs. supporting a select group of researchers determined by high international repute; and of individual grants vs. group or team grants were also considered.

By the end of the retreat, consensus had been reached on a number of major points relevant in the present context. They were that means should be developed to:

- encourage cross-, inter-, and multi-disciplinary research and the formation of teams to undertake it
- provide a higher level of support to the country's most distinguished researchers to permit them to be truly competitive in the international arena;
- fund particularly intriguing and novel projects, commonly interdisciplinary or with a strong interdisciplinary component, at a level that would permit the research to be completed expeditiously and in its entirety;
- "depersonalize" to some degree the Operating Grants

program in that too great an emphasis had come to be placed on the quality and reputation of the researcher (albeit a most reliable criterion in the longer term), too little on the quality of the projects described in the research proposal, and

- reduce the cost of NSERC's program delivery, including the cost to the academic research community.

Still later in the fall of 1989, Council responded to CORG's conclusions by creating a Program Policy Committee, with NSERC's former President, Gordon MacNabb, as Chair, and with representation from Council, CORG, and the research community at large. Progress reports were made to CORG and Council in October 1990. In March 1991, the Program Policy Committee proposed a restructuring of the Operating Grants program, with grants categorized by level into two tiers. Grants in the lower tier were to have a limited duration; those in the upper tier were to be awarded to more distinguished and senior researchers deserving higher and more sustained support. This proposal met heavy criticism from CORG, and it was suggested that the Program Policy Committee's recommendations be substantially reworked.

The outlines of a new proposal came to CORG in May, and to Council in June, 1991. It suggested that the Research (formerly Operating) Grants program be maintained, and that a new program, aimed at the support of team-based, project research, preferably interdisciplinary in character, be introduced and supported in part by funds drawn from the Research Grants budget. Council was sharply divided on this proposal but finally asked the Program Policy Committee to continue its deliberations and further refine the proposal.

The final report of the Program Policy Committee was presented to Council in October, 1991. Introduction of a new Collaborative Project Grant program was approved in principle, with the understanding that the program would be widely distributed within the community for comment before Council finally ratified it. CORG reviewed an initial draft of the new program description in December, 1991. Comments were sought from GSC members in February, 1992 and from the broader community in April, 1992.

Community reaction was mixed: those in support agreed with the need to focus more attention and support on collaborative and interdisciplinary research; those opposed questioned the need for the separate program, the wisdom of diverting funds from the Research Grants program to support it, and the added administrative burden the program would bring to applicants, peer reviewers, and NSERC staff. As a result, a modified program description was adopted by Council in October, 1992. Moreover, it was agreed to hold the first competition in the spring of 1993 and to support the program essentially from new funds (a 4% increase for three years, 1993-94 to 1995-96, obtained by the Minister of Science). When the government had to revoke its increase because of the magnitude of the

national deficit and continued lagging of the economy, NSERC decided to postpone implementation of the CPG program for one year, pending further review.

The decision to proceed with the CPG program without new funds was taken by Council in June, 1993, following full and frank consideration of all pertinent factors. Debate was intense. Those who believed the CPG Program should not be introduced without new money argued that,

1. existing programs were already hard-pressed and their budgets should not be weakened to mount a program the merits of which (in their minds) had not been adequately established;
2. the new program would encourage artificial collaboration, contrived to secure additional operating funds;
3. a great deal of natural collaboration was already occurring through existing programs and could be encouraged and expanded by augmenting and modifying these programs; and
4. counter to one of the principles enunciated by CORG following its retreat in 1989, the new program could only add to the administrative burden on the community and on NSERC.

Those who favoured introduction of the new program with funds derived by internal budgetary reallocation argued that,

a. the aims of the program were sound and had been recognized and upheld for over four years;
b. the new program represented the only realistic way of making new money available for fundamental research, some potentially of great import;
c. a three-year x $2 million reallocation from the Research Grants program would be leveraged into a three-year x $9 million fund for support of the same community of researchers;
d. the existing Team-Grant component of the Research Grants Program had not successfully fostered collaborative research; and
e. NSERC's credibility with other relevant government departments would be compromised if Council was perceived to be unable to put into effect one of its self-stated needs and high priorities.

The latter arguments carried the day, and the CPG program was approved for an initial three-year cycle, with the ultimate budgetary allocation of $27 million to be drawn from a number of programs straddling all three of NSERC's directorates -- Research Grants, Scholarships and International, and Targeted Programs.

Council is well aware of the strong reservations in the academic community about the wisdom of launching the CPG program. From correspondence received, however, it is clear that some criticism is based on misconceptions about the

program, and this despite a published program description that seems clear and unambiguous. For example, it is not true that only holders of Research Grants may apply for a CPG; nor is it true that those who already hold an NSERC grant cannot apply for a CPG. It is not true that the proposed collaboration must be interdisciplinary or that a collaborating partner must be in the private sector. It is not true that all parties to a proposed collaboration must be based in Canada (although if funds were to be awarded, they could be used, subject to existing regulations, only by the Canadian-based applicants). Finally, this article should have laid to rest a surprisingly common misconception of a different kind -- that the CPG program has been initiated only at the expense of the Research Grants program.

Time will tell whether or not Council has made a wise decision. While the jury is out, however, critics might take comfort from the knowledge that a review mechanism for CPG applications has been established which ensures that NSERC's high standards of objective peer review will be maintained. Furthermore, Council has directed NSERC staff to monitor the program closely and has agreed to review it on an annual basis. CORG and Council members invite the university research community to ensure that the program has a fair trial and receives a fair verdict.

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The 1994 Postgraduate Scholarships Competition

The anomalous results of the 1994 Postgraduate Scholarships competition have been related by some members of the academic community to the issue of NSERC's commitment to a broad, diverse, and strong national research base. Although the Postgraduate Scholarships program is an important factor in maintenance of that base, no special significance in this respect should be read into the 1994 decisions. It is important that the facts be known and understood.

In this year's competition, NSERC was able to award only 1338 new postgraduate scholarships. The corresponding number in 1993 was 1821. To explain this striking difference, it is necessary to understand some details of how NSERC's Postgraduate Scholarships program functions.

Following the change to the PGSA/PGSB system a few years ago, all of NSERC's new scholarships became two-year awards. New scholarships may be taken up by the student at any time between May 1 and the following January 15, which means that, in most cases, payments to an individual student are spread over three fiscal years. (NSERC's fiscal year runs from April 1 to March 31.) This being so, the scholarships budget for, say, 1994-95 must pay for not only new 1994 awards but also for many scholarships awarded in previous years. In order to decide how many new scholarships can be awarded in a given year, therefore, allowance must be made for the expected payments in that year for on-going scholarships. An estimate of the commitment for on-going scholarships is made in February, about a week before the selection committees meet. For several reasons described below, this estimate can never be precise.

A feature of the Postgraduate Scholarships program, which may not be widely understood, is that NSERC always offers more scholarships than the budget will allow. As do the airlines, NSERC counts on there being a certain proportion of "no-shows." Each year, the number of new awards to be offered is determined on the basis of past experience with the take-up rate. In February, the number of previous-year awards that have actually been taken up is not known, because some are not taken up until January. The impact of these January-start awards on the program expenditure does not become known until March.

Deferred awards are a further complication. NSERC's Postgraduate Scholarships may be deferred for up to three years. Not all are taken up during that period. Those that are utilized may be taken up at any time during the three-year period. NSERC, therefore, must estimate the number of deferred awards that will be reinstated in a given year on the basis of past experience.

Without going into details, other factors also make it difficult for NSERC to predict its expenditures on Postgraduate Scholarships with precision: for example, some students terminate their awards early; some PGSA holders transfer to doctoral programs and receive a higher stipend; and some students suspend their awards for a period while they accept employment. The program is designed to be very flexible for students, but at the price of increased difficulty for NSERC in projecting expenditures!

The 1994-95 budget for Postgraduate Scholarships was not significantly changed from that for 1993-94. This year's budget is $38.144 million, compared to $38.4 million for 1993-94. In 1994-95, however, an unusually large fraction of the budget will be consumed by on-going awards, which is a consequence, in part, of more 1993 awards being taken up and more deferred awards being reinstated than expected. This means that fewer new scholarships could be offered in 1994.

Another factor influencing the number of new awards in 1994 is the introduction this year of NSERC's new Industrial Postgraduate Scholarships. These awards are paid for from the budget for Postgraduate Scholarships. The impact upon the number of 1994 Postgraduate Scholarships is, in fact, quite small, because none of these scholarships can be taken up before September 1, 1994. Furthermore, although the universities collectively have quotas of these awards totalling 300 for a two-year period, they are unlikely to use a large fraction of their quotas during the current fiscal year.

It should also be noted that two of the three selection committees for Postgraduate Scholarships and Postdoctoral Fellowships exercised their prerogative to exchange a number of scholarships for additional Postdoctoral Fellowships. This action was prompted by the very intense competition for Postdoctoral Fellowships, which had a success rate of only 21.5%.

The combined effect of these factors was that only 1338 new scholarships could be offered this year. Even with this reduction in new awards, it is estimated that the total expenditure in 1994- 95 for Postgraduate Scholarships, including Industrial Postgraduate Scholarships, will be about $39.8 million, viz., about $1.6 million more than the budget. It is expected that the total number of students receiving scholarship support at some point during the 1994-95 fiscal year will be about the same as during the previous year; however there will be more on-going and fewer new students receiving support than in previous years.

About $0.5 million of this year's expenditure will be for Industrial Postgraduate Scholarships. Once this activity reaches its steady state in 1996-97, the annual cost will be about $3.7 million, or about 10% of the budget. The number of students supported through these awards will be about 300 in any given year. This compares to a net reduction in the number of regular Postgraduate Scholarships held (because of the removal of the $3.7 million) of about 230. Thus, there will be a net increase in the number of students supported as a result of the introduction of the industrial scholarships.

What is likely to be the situation concerning new awards in the 1995 competition? Much will depend upon how many new 1994 awards are taken up and how many holders of deferred awards decide to return to graduate studies during 1994-95. The higher than usual take-up rates and return rates in 1992 and 1993 are thought to have been caused, in part, by poor employment prospects during the recession. There are now indications that jobs are becoming more plentiful, at least in some fields. This suggests that there may be a reduced take-up rate this year and fewer deferred awards may be reinstated. Caution is warranted, however, and it is currently assumed that take-up and return rates will be much the same this year as in 1993-94. Once the large number of on-going students reach the end of their scholarship period, a greater fraction of the

budget will be available for new awards, but this will take time. The number of awards that can be funded also depends, of course, on the budget for Postgraduate Scholarships. NSERC's operational plan projects no significant change for 1995-96. At the moment, about the best that can be hoped for would be a modest increase in the number of new 1995 scholarships that can be offered. Until after the fall term has begun, however, few firm data will be available to make such projections.

Robert Kavanagh
Director General (Scholarships and International Programs)

The Future of the Undergraduate Student Research Awards Program

Some significant cuts have been made to the budget of the university component of the Undergraduate Student Research Awards (USRA) program. Why were these cuts necessary? What are the future prospects for this program?

In early 1993, the Executive Committee of Council undertook to review all of NSERC's programs with a view to identifying their relative priority. This exercise resulted in decisions to reduce the budgets of a number of programs in order to procure money for the proposed Collaborative Project Grants program, as well as several other initiatives. Among the programs selected for budget reduction was the university component of the USRA program. This decision was not taken lightly. Members of the Executive recognized that the program was highly regarded but, contrasted with certain other NSERC programs, could not be said to be central to NSERC's mandate. The decisions of the Executive Committee were subsequently endorsed by the Council.

The decision of Council concerning the USRA budget was to reduce it from its level of $7.2 million in accordance with the following schedule:

1993-94 — $7.2 million,
1994-95 — $6.2 million,
1995-96 — $5.2 million, and
1996-97 — $2.2 million.

The first reduction of $1 million was implemented in the current fiscal year.

NSERC has received many letters from the academic community concerning the plan to reduce the USRA budget. The contents of these letters have been made known to members of Council, who recognize the validity of the arguments made in support of the program. They also recognize the special value of this program for the smaller, predominantly undergraduate universities. As of now, however,

Council fails to see how it can revise its earlier decisions concerning the program's budgets for 1994-95 or 1995-96. It is severely constrained by its overall program budget and by current commitments.

With respect to the proposed USRA budget for 1996-97, Council recognizes that the size of that budget is insufficient to maintain a viable program of the present type. Should it be necessary to reduce the budget to the proposed level of $2.2 million, NSERC will consider various options for modifying the program in such a way as to provide the best possible support to undergraduate research consistent with the available financial resources.

Council will continue to seek advice about the future of the USRA program from its Committee on Scholarships and Fellowships.

Robert Kavanagh
Director General (Scholarships and International Programs)

Council Revives Task Force on Communications

At its meeting in June of this year, Council took action to improve communications by rejuvenating the "Communications Task Force," a body that functioned effectively when it was first established in 1991-92. Council members appointed to the new Task Force are Ronald McCullough, Ronald Steer, François Tavenas, Michele Thibodeau- DeGuire, and William Tupper. They will be joined by two members of NSERC's senior staff -- Pierre Normand, Chief of Communications, and Marilyn Taylor, Secretary to the Council.

NSERC must communicate regularly with a diverse, large, external community. In the academic sector, it must address its applicants and grantees, university presidents, vice-presidents, deans of engineering, science, and graduate studies, and staff in the universities' offices of research administration. In the public sector, information must be channelled to the relevant ministers of government and their departments, parliamentarians and their committees, government establishments that engage in scientific and engineering research, and other federal granting councils. Increasingly too, NSERC must make its activities better known to the private sector, so that the targeted programs can flourish and the mutual benefits of academic, governmental, and industrial collaboration can be exploited. Lastly, and of growing importance given the current trend toward globalization, NSERC must cultivate closer links with the international community of pure and applied scientists and the organizations that support them. All of this must be done with limited resources, because Council continues to insist that program

delivery have first call on NSERC's resources, fiscal and human.

In addition to making clear that the Task Force should seek new ways of improving NSERC's communications, two related and quite specific requirements were outlined in an effort to be more responsive to the community's concerns. These involve

(a) development of a series of key statements to explain and support NSERC's traditional programs, their roles and benefits, and NSERC's recently announced strategy for the next five years, and
(b) devising appropriate means of bringing these to the attention of policy- and opinion-makers in all regions of Canada.

Further to all of this, however, Council believes there is a need to establish closer contact with the academic research community so that the directions being taken by NSERC, the rationale behind these directions, and the decisions that bear upon these directions, can be communicated more effectively and rapidly.

At the same meeting in June, Council took an additional step to improve communications within NSERC itself. Recognizing the benefits of the joint discussions between Council and representatives of CORG on that occasion, Council agreed to hold regular, periodic meetings with the advisory committees on policy to the Research Grants, Scholarships and International, and Targeted Research directorates.

In the view of the Committee on Research Grants (CORG), NSERC already does a good job of communications, and this despite a substantial cut in its administrative budget. The Committee is encouraged by Council's further action with respect to the Task Force, as it could lead to closer links with those scientists and engineers supported by the Research Grants and related programs.

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Important Notices